

6 June 1955

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MEMORANDUM FOR: THE RECORD

SUBJECT : Discussions at National Bureau of Standards
regarding Methods for "drilling" through
Masonry Walls

1. The undersigned presented the problem of drilling a 1/2 inch hole through 8 - 48 inches of masonry as silently as possible to Dr. Huntoon, Associate Director, NBS. It was explained to Dr. Huntoon that the equipment would have to be portable and otherwise suitable for our type of operation.

2. Dr. Huntoon suggested the following general approaches to the problem:

- a. Hand drilling with diamond tipped twist drill.
- b. Power drilling with diamond tipped twist drill.
- c. Power drilling with diamond tipped core drill.
- d. Burning with an oxy-alumina flame cutting torch.
- e. Compressed air-abrasive jet.
- f. Ultrasonic drilling.

3. In suggestions a, b and c, the abrasive cutting noise of the drill in the masonry is inherent in the method and can only be slightly damped by water cooling the drill bit. The undersigned witnessed a core drilling demonstration at NBS conducted by Dr. Schoonover of the Mineral Products Testing Division. The demonstration consisted of drilling a 3/4 inch hole through 8 inches of medium aggregate concrete using a power drill equipped with a diamond tipped core drill. The drill tip was water cooled. The time required for drilling a through hole was approximately 3 minutes. The noise generated was comparable to power drilling a large diameter hole in brass or gray iron. The drill bits used can be employed without water cooling, but the result is slightly more noise and considerably shorter drill life. The bits used are commercially available for approximately \$50.00 each.

4. The burning process suggested in d has been developed by a Professor Grosse at Temple University. The Bureau could furnish no further information on this process.

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PAGE	2	REV DATE	22 July 80	BY	052447
ORIG COMP	056	QPI	56	TYPE	08
ORIG CLASS	5	PAGES	2	REV CLASS	
JUST	22	NEXT REV	2010	AUTH	NO 10-2

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5. The ultra-sonic process suggested was felt to be extremely inefficient when applied to concrete, brick, tile etc by members of the NBS staff familiar with similar equipment.

6. No pertinent data on the compressed air-abrasive jet method was available at NBS but it was felt that considerable equipment would be required for our application.



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